

App. No. 09/196,185
Amendment dated July 6, 2006
Reply to Office action dated Apr. 6, 2006

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Atty. Docket No. AB-1758 US
OPP 980427 US

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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the Application:

Listing of Claims:

1. (withdrawn) A manufacturing method of a molybdenum-metal alloy nitride layer by a reactive sputtering using argon gas and nitrogen gas as a reactive gas mixture:

wherein a target for the reactive sputtering is made of molybdenum alloy comprising a metal of 0.1 to less than 20 atm %, and inflow amount of the nitrogen gas is at least 50% of the inflow amount of the argon gas.

2. (withdrawn) The method of the claim 1, wherein the metal is one selected from the group consisting of tungsten, chromium, zirconium and nickel.

3. (withdrawn) A molybdenum-metal alloy nitride layer manufactured by the method of claim 2.

4. - 5. (cancelled)

6. (withdrawn) A manufacturing method of a wire for a liquid crystal display comprising the steps of:

depositing a first layer made of either molybdenum or molybdenum alloy on a substrate;
depositing a second layer made of either molybdenum nitride or molybdenum alloy nitride by using reactive sputtering; and,
patterning simultaneously the second and the first layers.

7. (withdrawn) The manufacturing method of claim 6, wherein a target for the reactive sputtering is made of either molybdenum or molybdenum alloy, and

the molybdenum alloy comprises one selected from tungsten, chromium, zirconium and nickel of 0.1 to less than 20 atm %.

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8. (withdrawn) The manufacturing method of claim 7, wherein a reactive gas mixture for the reactive sputtering includes argon gas and nitrogen gas, and the inflow amount of the nitrogen gas is at least 50% of the inflow amount of the argon gas.

9. (withdrawn) The manufacturing method of claim 8, wherein the thickness of the second layer is 300 Å to 1,000 Å.

10. (withdrawn) A manufacturing method of a wire for a liquid crystal display comprising the steps of:

depositing a first layer made of either molybdenum nitride or molybdenum alloy nitride by using reactive sputtering;

depositing a first layer made of either molybdenum or molybdenum alloy on a substrate; and

patterning simultaneously the second and the first layers.

11. (withdrawn) The manufacturing method of claim 10, wherein a target for the reactive sputtering is made of either molybdenum or molybdenum alloy, and,

the molybdenum alloy comprises one selected from tungsten, chromium, zirconium and nickel of 0.1 to less than 20 atm %.

12. (withdrawn) The manufacturing method of claim 11, wherein a reactive gas mixture for the reactive sputtering includes argon gas and nitrogen gas, and the nitrogen gas inflow amount of the nitrogen gas is at least 50% of the inflow amount of the argon gas.

13. (withdrawn) The manufacturing method of claim 12, wherein the thickness of the first layer is 300 Å to 1,000 Å.

14. (currently amended) A thin film transistor (TFT) panel, comprising;
an insulating substrate;
a gate wire formed on the substrate and comprising a gate line, a gate electrode and a gate pad;

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a supplementary gate wire formed on the substrate sequentially with and corresponding substantially to the gate wire;

a gate insulating layer covering the gate wire and the supplemental gate wire;

a semiconductor layer formed on said gate insulating layer;

a data wire formed on the semiconductor layer and comprising a data line, a source electrode and a drain electrode;

a supplementary data wire formed on the substrate sequentially with and corresponding substantially to the data wire;

a passivation layer formed on the data wire, the supplementary data wire, the supplementary gate wire and the gate wire and having a first contact hole extended to the gate pad and a second contact hole extended to the drain electrode; and,

a transparent conductive layer formed on the passivation layer and connected to the gate pad through the first contact hole and the data wire through the second contact hole, wherein

~~wherein each of the supplementary gate wire and the supplementary data wire is substantially inert to an etchant used for etching the transparent layer, for preventing the gate pad and the data wire from being eroded by the etchant~~

at least one of the gate wire and the data wire comprises a metal layer and a metal nitride layer, the metal of the metal nitride layer being the same as that of the metal layer and substantially inert to an etchant used for etching the transparent layer so as to prevent the at least one gate pad and data wire from being eroded by the etchant, and

the transparent conductive layer directly contacts an upper surface of the metal nitride layer in the first and the second holes.

15 ~ 17. (cancelled)

18. (withdrawn) A manufacturing method of a liquid crystal display comprising the steps of:

forming a gate wire on a substrate;

forming a gate insulating layer on the gate wire;

forming a semiconductor layer on the gate insulating layer;

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depositing a first layer made of either molybdenum or molybdenum alloy;
depositing a second layer made of either molybdenum nitride or molybdenum alloy nitride by reactive sputtering method;
patterning simultaneously the second layer and the first layer to form a data wire and a supplementary data wire;
forming a passivation layer on the data wire or the supplementary data wire; and
forming a pixel electrode made of ITO.

19. (withdrawn) The manufacturing method of claim 18, wherein a target for the reactive sputtering is made of either molybdenum or molybdenum alloy, and
the molybdenum alloy comprises one selected from tungsten, chromium, zirconium and nickel of 0.1 to less than 20 atn %.

20. (withdrawn) The manufacturing method of claim 19, wherein a reactive gas mixture for the reactive sputtering includes argon gas and nitrogen gas, and the nitrogen gas inflow amount of the nitrogen gas is at least 50% of the inflow amount of the argon gas.

21. (previously presented) The TFT panel of claim 14, wherein the transparent conductive layer is formed of indium tin oxide (ITO).

22. (previously presented) The TFT panel of claim 21, wherein the transparent conductive layer comprises:
a gate ITO layer connected to the gate pad through the first contact hole; and a pixel electrode connected to the drain electrode through the second contact hole.

23. (previously presented) The TFT panel of claim 14, wherein at least one of the gate line and the data line comprises a metal or a metal alloy.

24. (previously presented) The TFT panel of claim 23, wherein at least one of the supplementary gate line and the supplementary data line comprises a metal nitride or a metal alloy nitride.

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25. (previously presented) The TFT panel of claim 24, wherein the at least one of the supplementary gate line and the supplementary data line further comprises one selected from a group consisting of tungsten, chromium, zirconium and nickel.

26. (currently amended) A thin film transistor (TFT) panel, comprising:
an insulating substrate;
a gate wire formed on the substrate and comprising a gate line, a gate electrode and a gate pad;
a supplementary gate wire formed on the substrate sequentially with and corresponding substantially to the gate wire;
a gate insulating layer covering the gate wire;
a semiconductor layer formed on said gate insulating layer;
a data wire formed on the semiconductor layer and comprising a data line, a source electrode and a drain electrode;
a supplementary data wire formed on the substrate sequentially with and corresponding substantially to the data wire;
a passivation layer formed on the data wire, the supplementary data wire, the supplementary gate wire and the gate wire and having a first contact hole extended to the gate pad and a second contact hole extended to the drain electrode; and,
a transparent conductive layer formed on the passivation layer and connected to the gate pad through the first contact hole and the data wire through the second contact hole, wherein
~~wherein at least one of the gate wire and the data wire comprises a metal or a metal alloy, and at least one of the supplementary gate line and the supplementary data line comprises a metal nitride or a metal alloy nitride~~
at least one of the gate wire and the data wire comprises a main layer and a supplemental layer, the main layer comprising a metal or a metal alloy and the supplemental layer comprising a metal nitride or a metal alloy nitride in which the metal or metal alloy is the same as that of the main layer, and
the transparent conductive layer directly contacts an upper surface of the supplemental layer in the first and the second holes.